

Sociology 2275, Social Network Analysis

Assignment 7: Two-Mode Network Data

This assignment provides a bit of experience in working with two-mode (or “affiliations”) data involving “actor-event” relationships. In the Software Notes folder of the course website, you can find notes about R functionality in xUCINET that will, I hope, be helpful in completing it.

We will work with a data set about cultural production. Data on collaborations between movie producers and music composers during the 1964-1976 period were collected by Robert Faulkner and used in the book *Music on Demand* (Transaction Books, 1983). I obtained them from the website for *Exploratory Social Network Analysis with Pajek*, by de Nooy, Mrvar, and Batagelj (first edition, I believe).

A xUCINET data project “Movies”) including these data is posted as an .RData file in the Data folder of the course website. The project contains only an incidence matrix on collaborations, with 62 rows (producers) and 40 columns (composers); there are no attributes. The data are binary: a 1 indicates that a composer wrote the score for at least one movie produced by the respective producer during the period covered. (The original data set also recorded the number of producer-composer collaborations, but I dropped this datum.)

You can download this file, and then load it into your environment using a command like

```
load(Movies, file=(file.choose()))
```

and then navigating to wherever you have stored the file; if you know the file path, you can substitute that in for “file=file.choose()”.

Bolded statements below indicate what you should turn in.

1. Calculate basic descriptive statistics for the producer-composer network, including its size, density, and component distributions.

2. Construct a projection of the data matrix showing the number of times two composers collaborated with common producers. **Display its first 10 rows and columns. Which pair(s) of composers worked with a common producer most often** (base your answer here on all 40 composers, not only the first 10)?

3. Obtain degree and betweenness centrality scores for the producer/composer network. (You will need to construct a bipartite network from the incidence matrix in order to obtain the betweenness scores.) **Display the first 10 values you obtain for each measure. Which 2 composers** (out of all 40) **are most central in terms of each measure? Which 2 producers** (out of all 62) **appear to be most central?**

4. Visualize the two-mode network (use the incidence matrix in doing so), decorating it somehow to distinguish between producers and composers. **Turn in a copy of the plot, noting the 2 composers and the 2 producers who are most central in terms of betweenness.**
5. Obtain a core/periphery partitioning of the producer/composer network. **Report the partition you obtain, display it using a subgroup density table, and depict that partition by using it as part of a visualization of the bipartite network.**

Due: Thursday, November 10